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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,056	12/31/2001	Byeong-Dae Choi	053785-5045	5637
9629	7590	03/08/2005	EXAMINER	
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			WARREN, MATTHEW E	
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/032,056

Applicant(s)

CHOI, BYEONG-DAE

Examiner

Matthew E. Warren

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This Office Action is in response to the RCE and Amendment filed on December 17, 2004.

#### ***Claim Objections***

Claim 1 is objected to because of the following informalities: the last line of the claim contains the limitation "...and the metal layer is formed." The limitation does not render the claim indefinite but seems to be out of place. For purposes of examination, the limitation will be ignored until it is clarified or written properly. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Prior Art Figures 2 and 3F (APAF) in view of Kakuda et al. (US 5,162,933).

In re claim 1, APAF 2 and 3F show an array substrate for a liquid crystal display device, comprising a substrate (22) a plurality of gate lines (25) arranged transversely on the substrate; a plurality of data lines (27) disposed orthogonal to the plurality of gate lines. A plurality of thin film transistors is formed on the substrate adjacent to

intersections of the gate lines and the data lines. Each thin film transistor includes a gate electrode (32), a gate insulation layer (41), an active layer (45), an ohmic contact layer (47), a source electrode (33) and a drain electrode (35). A plurality of pixel electrodes (17) are disposed at pixel regions (P) defined by the intersections of the gate lines and the data lines wherein each pixel electrode connected to a corresponding one of the drain electrodes. A metal layer (28) is formed at peripheral portions of the drain electrode to extend from the pixel electrode. The APAF shows all of the elements of the claim except the metal layer formed on an entire surface of each of the data lines.

Kakuda et al. shows (figs. 3 and 4) an LCD device having data line 11b with a metal layer formed on the entire surface. With such a configuration, the materials of the data line provide a light blocking function, have good heat resistance, may lower the electrical resistance, and help simplify the manufacturing process because the data line can be formed simultaneously with the pixel electrode (col. 6, line 61 – col. 7, line 29). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the data line of the APAF by forming a metal layer on the entire data line as taught by Kakuda to provide a light blocking data line having good heat resistance, a specified electrical resistance, and a reduced manufacturing steps.

In re claims 2 and 11, the APAF shows (fig. 3B) that the gate insulation layer (41) is disposed on the gate electrode or a plurality of gate electrodes as shown in figure 2.

In re claim 3, the APAF shows (fig. 3B) that the active layer (45) is disposed on the gate insulation layer, and the ohmic contact layer (47) is disposed on the active layer.

In re claim 4, the APAF (fig. 3F) shows that the source electrode (33) and the drain electrode (35) are disposed on the ohmic contact layer.

In re claims 5 and 6, the APAF shows (fig. 2) that the source electrode extends from one of the data lines and the drain electrode extends from one of the pixel electrodes.

In re claim 7-10, the APAF discloses [0009] that the drain electrode and source electrode include at least a transparent conductive material (ITO). Each data line includes at least the transparent conductive material (ITO). Each pixel electrode (17) includes the transparent conductive material (ITO). The transparent conductive material is selected from a group including indium tin oxide, indium zinc oxide, zinc oxide, tin oxide, and indium oxide.

In re claim 12, Kakuda discloses (col. 7, lines 8-28) that the materials of the metal layer are selected from the group including Au, Ag, Cu, and Al.

In re claim 14 and 15, the APAF shows (fig. 3F) that the metal layer (28) is formed at peripheral portions of the plurality of pixel electrodes and at peripheral portions of the drain electrode.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kato et al. (US 4,918,504) also shows an LCD having a metal layer formed on a data line.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (571) 272-1737. The examiner can normally be reached on Mon-Thur and alternating Fri 9:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MEW  
*MEW*  
March 4, 2005

*George Eckert*  
GEORGE ECKERT  
PRIMARY EXAMINER